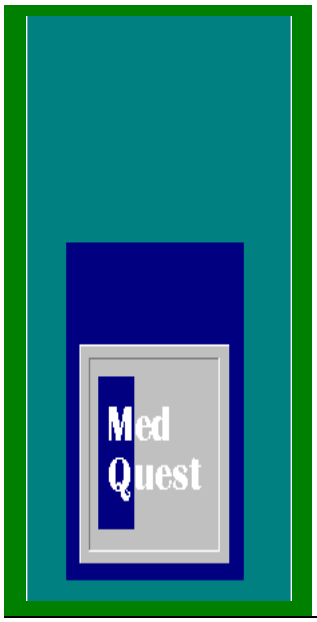


MEDQUEST SOFTWARE

WORKING WITH SCREENS: DESIGN TUTORIAL # 2

September 30, 1998

TABLE OF CONTENTS

OVERVIEW

INTRODUCTION

This ***MedQuest Design Tutorial 2: Working With Screens*** is the second in a series of tutorials prepared to help you gain an understanding on how to use the MedQuest Application to design a data entry system that contains screen sets, screens, and subscreens. It is recommended that you adhere closely to the instructions provided; they will enable you to explore the major design activities necessary for creating those items.

TUTORIAL STRUCTURE

The ***Tutorial*** is basically divided into topics. Each topic contains, where applicable:

- **Explanation**. This part lists the functions provided for the topic being described as well as the definition and/or the explanation regarding those functions. This part provides you with an understanding of how the tool works and is **not** to be used for testing the tool.
- **Exercise(s)**. This part provides examples of activities that you can perform to practice using the tool.

MEDQUEST

DATA ENTRY SYSTEM AND MODULES

The Data Entry System is a tool designed to collect clinical data for analysis projects. Each project is called a module and is represented by a three-character acronym.

Example: The PNE Module is a data entry system developed to collect data for the Pneumonia project.

MEDQUEST MAIN FUNCTIONS

- **Design**. Used to build new or to modify developing data entry systems by creating a data dictionary file.
- **Data Entry**. Used to collect data for the data entry systems designed using MedQuest by creating the clinical data file **XXX.MDB** where XXX represents the module acronym.

The MedQuest Application is compatible with the MedQuest Manager (SMS) and MedQuest Quality (IQC) utilities.

MEDQUEST TERMINOLOGY

MEDICAL DATA ENTRY DESIGN SYSTEM (MEDQUEST)

An application developed to enable a user to design a data entry system and to collect data for that system.

DATA ENTRY SYSTEM

A system designed using MedQuest to collect clinical data for a data analysis project. Each project is called a Module and is represented by a three-character acronym (e.g., PNE is the Data Entry System for the Pneumonia project).

MODULE

See **Data Entry System**.

DESIGN

A MedQuest function that allows you to develop a data dictionary for a data entry system by creating a data dictionary file.

DATA ENTRY

A MedQuest function that allows you to collect data for the data entry system designed using the MedQuest Design function by entering data in the data store file called **XXX.MDB** where "XXX" represents the module acronym (e.g., PNE.MDB is the data store file for the data entry module Pneumonia).

SET OF SCREENS

The group of screens belonging to a selected DES. If the data entry system being created or being edited covers a narrowly-defined subject area and contains a reasonable number of variables, only one screen set is necessary.

If the DES being created or being edited covers a discipline or a complex subject that can be logically divided into discrete subject areas, each of these subject areas can be represented by a set of screens (e.g., **Lumbar Disc Disease**, **Head Injury**, and **Brain Tumor** are three sets of screens belonging to the DES called Neurology).

SCREENS

A screen is an area beneath the Tab where variables belonging to the same type (e.g., the Tab **Laboratory** represents the Laboratory screen and collects laboratory-related variables) are laid out. A screen is represented by a Tab. The variables on the screen are displayed by selecting a Tab.

SUBSCREENS

A subscreen is an area beneath the Subtab where variables belonging to the same type are laid out. A subscreen is represented by a Subtab. The variables on the subscreen are displayed by selecting a Subtab.

TAB/SUBTAB

A Tab/Subtab indicates the screen labels (e.g., Tab **History** is the tab that is used for retrieving the **History** screen). A Tab may contain one or more Subtabs.

VARIABLES

A variable is a data entry field that accepts data according to the specifications and rules developed during the design.

VARIABLE TYPES

Variable types and attributes determine the type of data the system will accept (e.g., a variable will accept a date format, etc.) during the data entry. A variable type for each variable is defined in the design. For example, if the variable **Admission Date** accepts only data that are in date format, the variable type must be defined as variable type **Date**.

SET OF SCREENS

CONCEPT

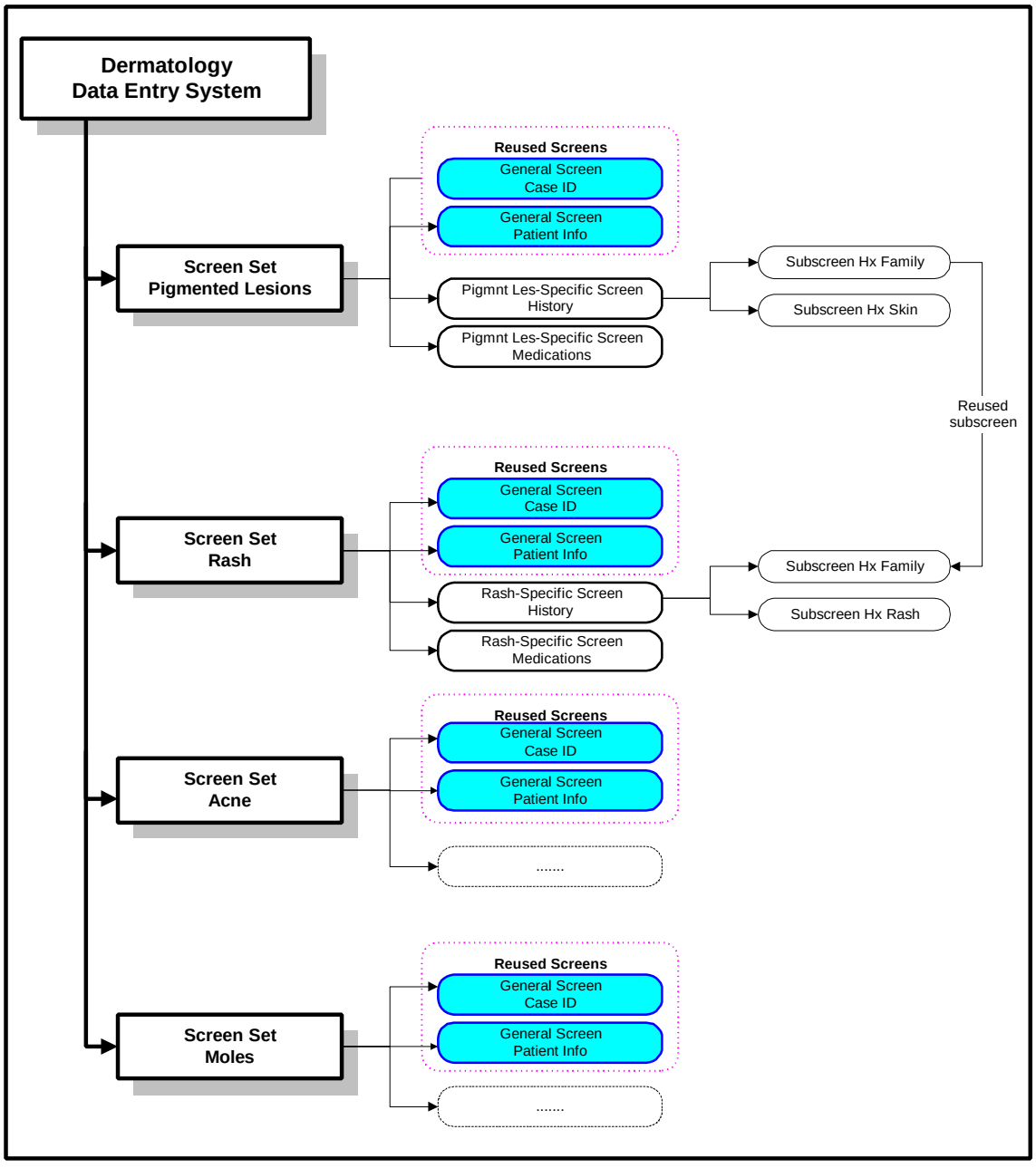
Typically a data entry system that requires sets of screens are those that contain a subset(s) of a definable discipline or broad subject area. For example, a data entry system developer may want to collect and analyze data related to neurology. Within this discipline, the developer is interested in collecting the information in the following areas:

- Neurosurgery
- Lumbar disc
- Head injury

In this instance, the developer may select to use MedQuest to create a data entry system with sets of screens. For each area introduced, a screen set is added. Each screen set may share some screens as well as variables with another area.

All of these requirements can be met using MedQuest.

STRUCTURE


Dermatology
Data Entry System
Screen Set
Pigmented Lesions
Reused Screens
General Screen
Case ID
General Screen
Patient Info
Pigmnt Les-Specific Screen
History
Pigmnt Les-Specific Screen
Medications
Subscreen Hx Family
Subscreen Hx Skin
Reused
subscreen
Screen Set
Rash
Reused Screens
General Screen
Case ID
General Screen
Patient Info
Rash-Specific Screen
History
Rash-Specific Screen
Medications
Subscreen Hx Family
Subscreen Hx Rash
Screen Set
Acne
Reused Screens
General Screen
Case ID
General Screen
Patient Info
.....
Screen Set
Moles
Reused Screens
General Screen
Case ID
General Screen
Patient Info
.....

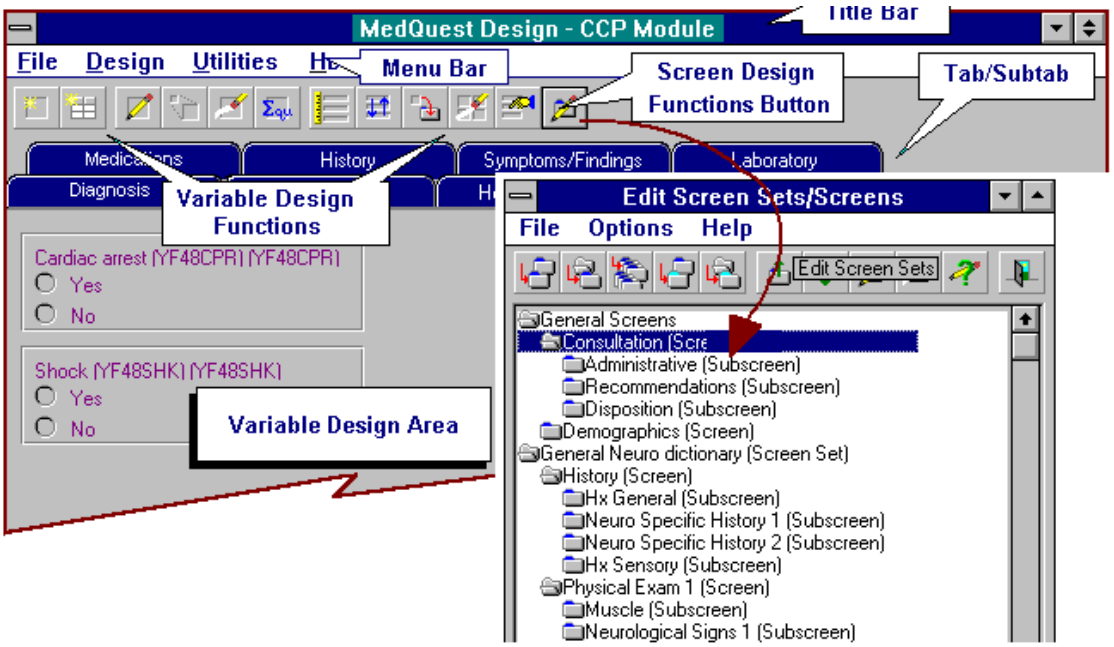
SCREENS VERSUS SUBJECT-SPECIFIC SCREEN SET

The figure above demonstrates a typical use of screen sets, screens and subscreens as well as reused screens and subscreens.

A data entry system with more than one screen set often needs to take advantage of reusing a screen. For example, in the figure above, the **Case ID** and **Patient Info** screens are reused for each screen set. These screens are exactly the same.

SCREEN DESIGN FUNCTIONS

EDIT SCREEN SETS/SCREENS WINDOW



The **Edit Screen Sets/Screens** function can be accessed through the <EDIT SCREEN SETS/SCREENS> button on the menu bar. These functions include:

- **Add Screen**. Add a screen below a selected screen set or screen.
- **Add Subscreen**. Add a subscreen below a selected screen or subscreen.
- **Add Screen Set**. Add a screen set below a selected screen set.
- **Add Screen Call**. Reuse a screen from another screen set.
- **Add Subscreen Call**. Reuse a subscreen from another screen set.
- **Move Up**. Move a selected set of screens, a screen, or a subscreen upward.
- **Move Down**. Move a selected set of screens, a screen, or a subscreen downward.
- **Edit**. Edit a selected set of screens, a screen, or a subscreen.
- **Delete**. Delete a selected set of screens, a screen, or a subscreen.
- **Edit Rules**. Add "Do Not Load Screen/Subscreen If" or "Disable Screen/Subscreen If" rules.
- **Edit Clinical Help**. Edit clinical help of a selected screen set, a screen, or a subscreen.
- Close. Exit the **Edit Screen Sets/Screens** window.

SCREEN SET DESIGN

DEFINE SCREEN SET

The following exercises are designed to familiarize you with building a data entry system with more than one screen set by walking you through the creation of a data entry system called **Dermatology**.

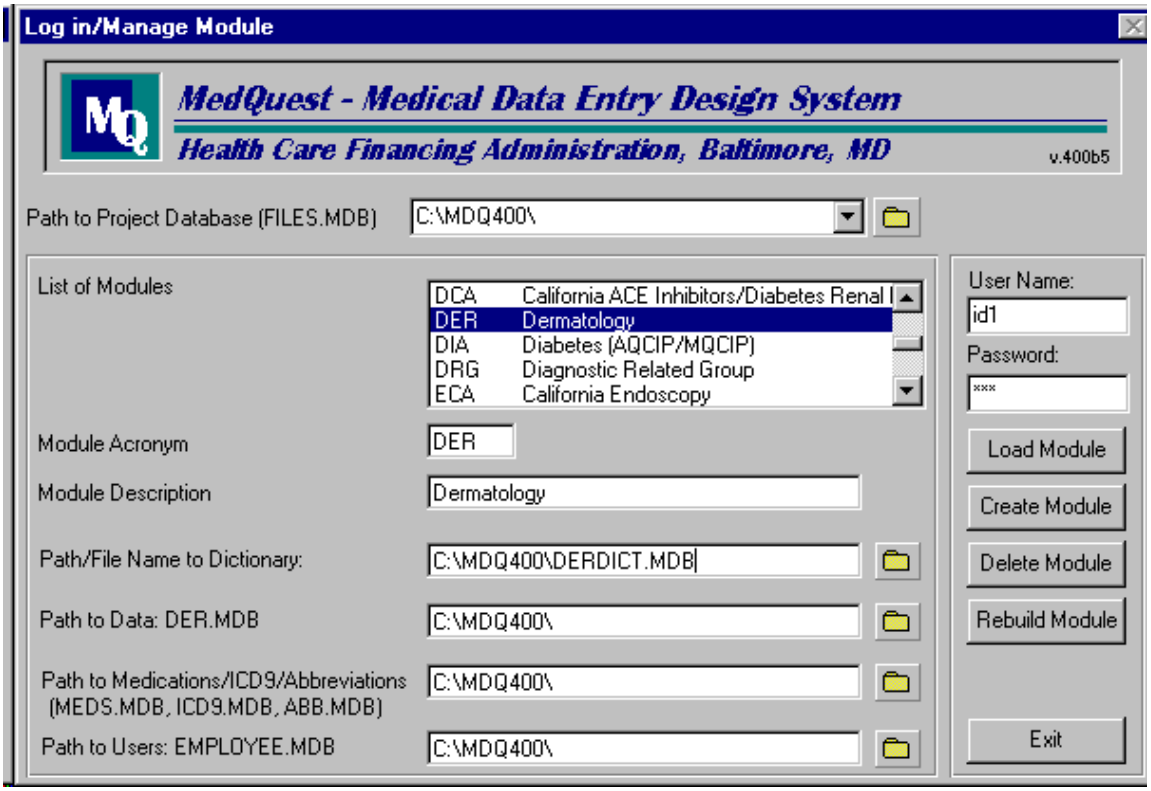
This hypothetical module consists of four screen sets:

- Pigmented Lesions
- Rash
- Acne
- Moles

Every screen set will share two common screens: **Patient Info** and **Case ID**. These two screens contain patient- and provider-related data relevant to every subject area within the module. There will be one screen (**Hx Family**), that needs to be used on both the "**Pigmented Lesions**" and "**Rash**" screen sets.

CREATE A MODULE

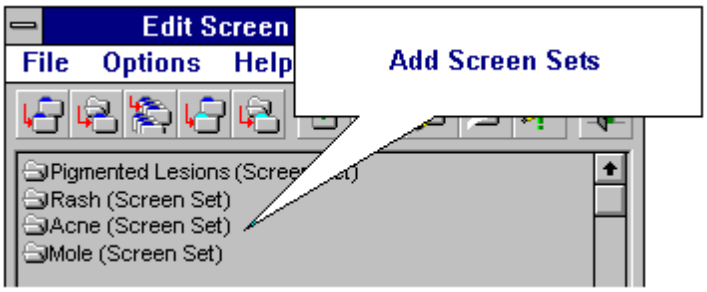
Access the MedQuest and create the **Dermatology** module.



Exercise: Create a new data entry module called **Dermatology** without any pre-existing screens or variables. Assign "**DRM**" as the acronym.

ADD SCREEN SETS

Add screen sets that represent different data collection areas related to dermatology. Note, by default, that you are always provided with a **General Screens** screen set to start.



Exercise 1: Load the **Dermatology** module and select the **Design** option on the **Design** window to access the **MedQuest Design** window and start the design. On the **MedQuest Design** window, click on the <EDIT SCREEN SETS/SCREENS> button to access the **Edit Screen Sets/Screens** window.

Exercise 2: Highlight the **General Screens** screen set, click on the <EDIT> button and type "**PIGMENT**" in the *Screen Set Name* text box and "**Pigmented Lesions**" in the *Screen Set Description* text box, and click on the <OK> button.

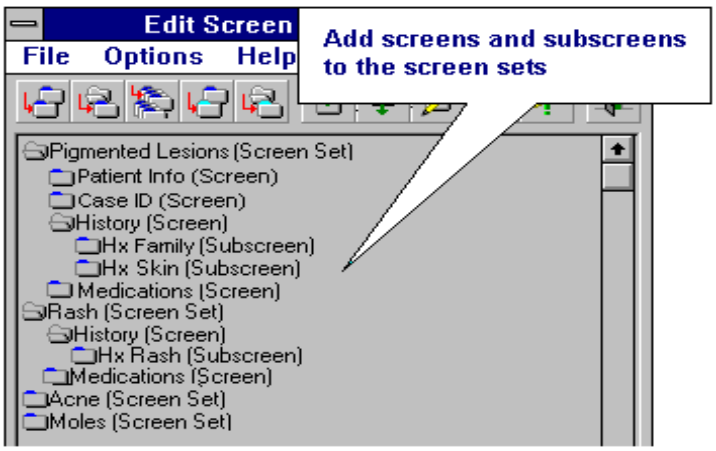
Exercise 3: Highlight the screen set "**Pigmented Lesions**" and create another screen set called "**Rash**" with "**RASH**" as the screen set name.

Exercise 4: Highlight the screen set "**Rash**" and create another screen set called "**Acne**" with "**ACNE**" as the screen set name.

Exercise 5: Highlight the screen set "**Acne**" and create another screen set called "**Moles**" with "**MOLES**" as the screen set name.

ADD SCREENS AND SUBSCREENS FOR A SELECTED SCREEN SET

Create screens and subscreens specific to the selected set of screens.



Create screens and subscreens for the **Pigmented Lesions** screen set.

Exercise 1: Create two screens under the first screen set that you will reuse. Highlight the screen set **Pigmented Lesions**, click on the <ADD SCREEN> button and create the "**Patient Info**" screen (screen name "**PATIENT**"). Then click on the <ADD SCREEN> button again and create the "**Case ID**" screen (screen name "**CASEID**").

Exercise 2: Highlight the "**Case ID**" screen, click on the <ADD SCREEN> button and create the "**History**" screen (screen name "**HXPL**").

Exercise 3: Highlight the "**History**" screen and add subscreens called "**Hx Family**" (subscreen name "**HXFAM**") and "**Hx Skin**" (subscreen name "**HXSKIN**").

Exercise 4: Highlight the screen "**History**" and create the "**Medications**" screen (screen name "**MEDIC**").

Create screens and subscreens for the **Rash** screen set.

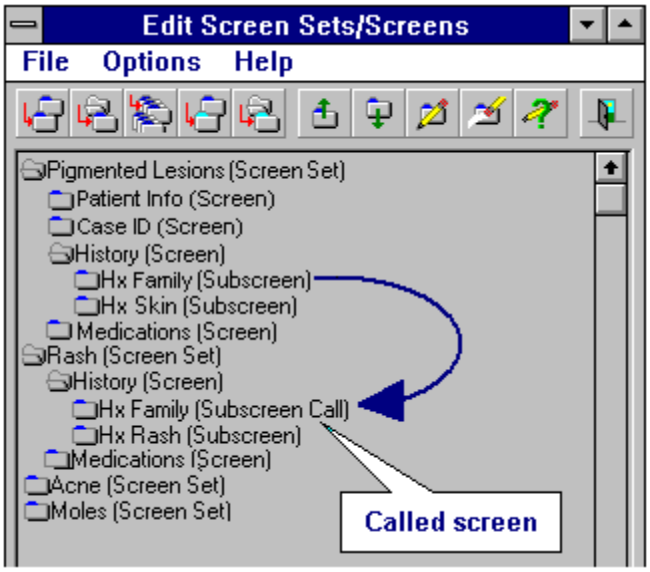
Exercise 5: Highlight the screen set "**Rash**" and create a screen called "**History**" (screen name "**HXRASH**").

Exercise 6: Highlight the screen "**History**" and create a subscreen called "**Hx Rash**" (subscreen name "**HXRASH2**").

Exercise 7: Highlight the screen "**History**" and create a screen called "**Medications**" (screen name "**MEDRASH**").

REUSING A SCREEN

Reusing a screen from another set of screens.

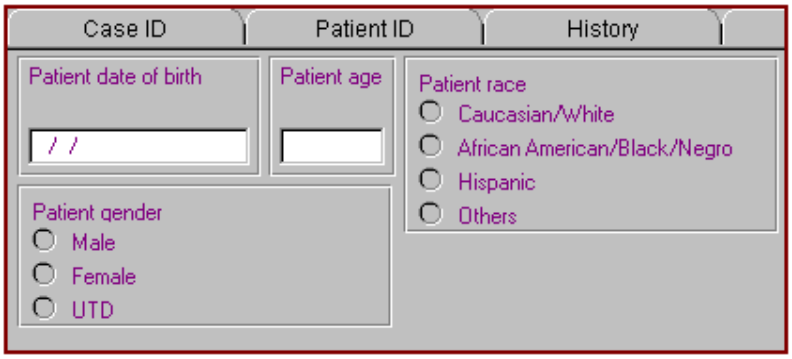


Exercise 1: Highlight the **History** screen of the **Rash** set of screens, click on the <ADD SUBSCREEN CALL> button and select "**HXFAM**" from the *Existing Screen Name* drop down list box on the *Add New Screen Call* window. Type "**Hx Family**" in the *Screen Call Description* text box.

Exercise 2: Reuse the "**Patient Info**" and "**Case ID**" screens on all of the screen sets. You can accomplish this by doing the following: Highlight one by one the "**Rash**," "**Acne**," and "**Moles**" screen sets. For each highlighted screen set, select the <Add Screen Call> button to add the "**Case ID**" and "**Patient Info**" screen to each screen set. Make sure you give each screen the same description used in the "**Pigmented Lesions**" screen set.

ADD VARIABLES TO SOME OF THE REUSED SCREENS

Add variables to the **Patient Info** screen by exiting the **Edit Screen Sets/Screens** window and selecting the "**Patient Info**" tab. This will open up the variable design area. For the following exercise you will use the **Add Variable** function in the **Design** window. If you are not familiar with how to do this, refer to ***Tutorial 1***.



Exercise 1: Click on the "**Patient Info**" tab. Add Variable "**Patient date of birth**" in the short title box (Name: "**DRMPTDOB**," Screen title: "**Patient date of birth**"). Select variable type "**Date**."

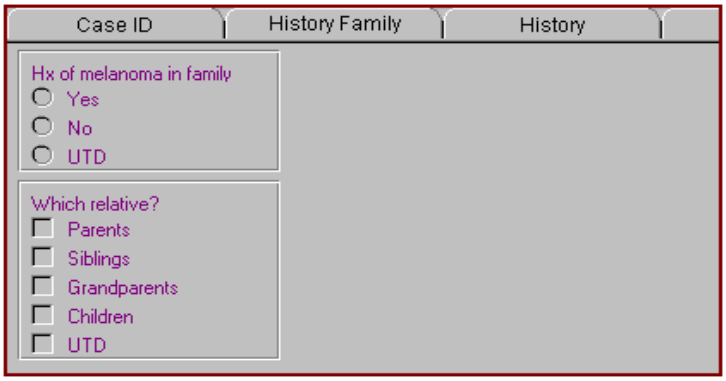
Exercise 2: Add Variable "**Patient age**" (Name: "**DRMPTAGE**," Screen title: "**Patient age**"). Select variable type "**Number (no units)**" and indicate "**3**" in the *# Whole Digits* box.

Exercise 3: Add Variable "**Patient gender**" (Name: "**DRMPTSEX**," Screen title: "**Patient gender**"). Select variable type "**Option (pick one)**" and add "**Male**," "**Female**," and "**UTD**" as options.

Exercise 4: Add Variable "**Patient race**" (Name: "**DRMPTETH**," Screen title: "**Patient race**"). Select variable type "**Option (pick one)**" and add "**Caucasian/White**," "**African American/Black/Negro**," "**Hispanic**," and "**Other**" as options.

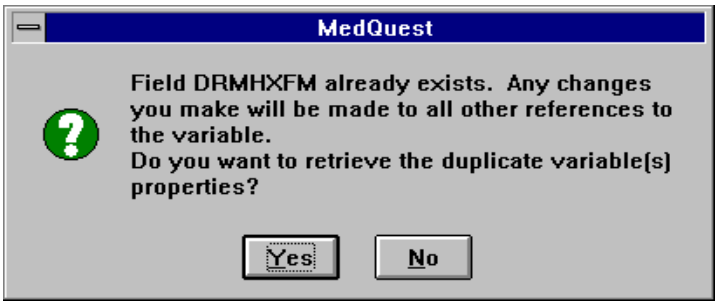
ADD VARIABLES TO A SELECTED SCREEN OR SUBSCREEN

Add variables to the subscreen "**Hx Family**" by selecting that screen and using the **Add Variable** function to perform the following exercise. Remember, you should no longer be in the **Edit Screen Set/Screens** window.



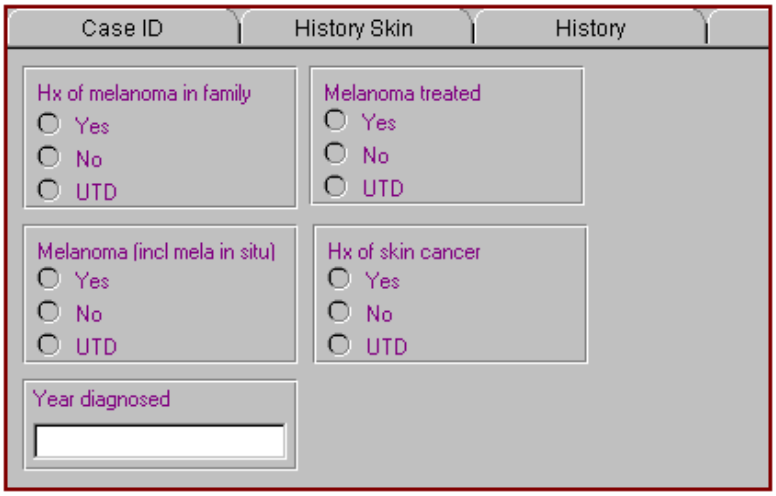
Exercise 1: Select the "**Hx Family**" screen and add Variable "**Melanoma hx (family)**" (Name: "**DRMHXFM**," Screen title: "**Hx of melanoma in family**"). Select variable type "**Option (pick one)**" and add "**Yes**," "**No**," and "**UTD**" as options.

Exercise 2: Add Variable "**Melanoma hx (relative)**" (Name: "**DRMHXFM1**," Screen title: "**Which relative?**"). Select variable type "**Option (pick one or more)**" and add "**Parents**," "**Siblings**," "**Grandparents**," "**Children,**" and "**UTD**" as options. Make this Variable a child of Variable "**Melanoma hx (family)**."



After you enter "DRMHXFM," MedQuest will prompt you with a warning message because the first seven characters of the new variable are identical to an existing variable.

Click on the <No> button to avoid retrieving the duplicate variable's properties.



Exercise 3: Select the "**Hx Skin**" screen and add Variable "**Skin cancer hx (personal)**" (Name: "**DRMHXSK**," Screen title: "**Hx of skin cancer**"). Select variable type "**Option (pick one)**" and add "**Yes**," "**No**," and "**UTD**" as options.

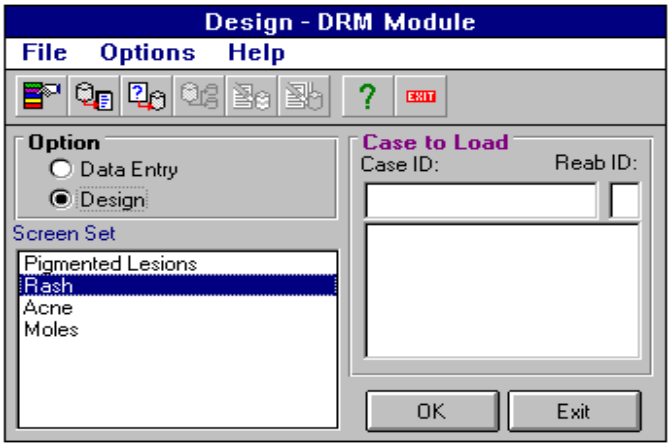
Exercise 4: Add Variable "**Melanoma hx**" (Name: "**DRMML**," Screen title: "**Melanoma (incl mela in situ)**"). Select variable type "**Option (pick one)**" and add "**Yes**," "**No**," and "**UTD**" as options.

Exercise 5: Add Variable "**Melanoma year dx**" (Name: "**DRMMLYR**," Screen title: "**Year diagnosed**"). Select variable type "**Number (no units)**" and indicate "4" in the *# Whole Digits* box.

Exercise 6: Add Variable "**Melanoma treated**" (Name: "**DRMMLTR**," Screen title: "**Treated**"). Select variable type "**Option (pick one)**" and add "**Yes**," "**No**," and "**UTD**" as options.

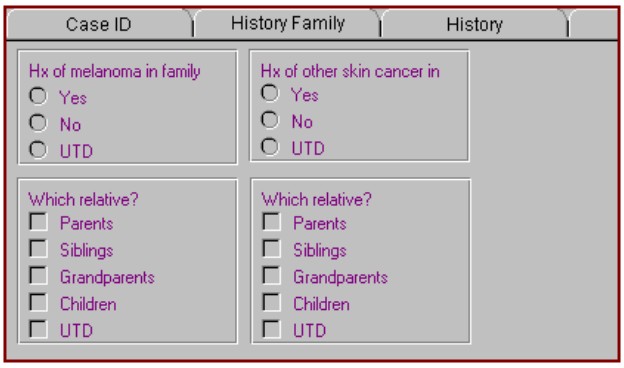
SWITCH TO ANOTHER SET OF SCREENS

By default, when you started your design you were working on the "**General**" screen set which you subsequently renamed to "**Pigmented Lesions**." Now, to add variables to any other screen set, you must exit the **Design** window.



Exercise: When you exit the **Design** window, the data store database will be rebuilt to save the new variables you added. You will then be returned to the **Case Selection** screen. From the **Case Selection** screen, highlight the **Rash** screen set and click on the <OK> button to design that screen set.

ADD VARIABLES TO THE CALLED SCREEN



Exercise 1: Select the "**Hx Family**" screen and add "**Oth Skin cancer hx (family)**" (Name: "**DRMHXSFM**," Screen title: "**Hx of other skin cancer in fam**"). Select variable type "**Option (pick one)**" and add "**Yes**," "**No**," and "**UTD**" as options.

Exercise 2: Add Variable "**Skin cancer hx (relative)**" (Name: "**DRMHXSF1**," Screen title: "**Which relative?**"). Select variable type "**Option (pick one or more)**" and add "**Parents**," "**Siblings**," "**Grandparents**," "**Children,**" and "**UTD**" as options.

Note that the two new variables added to the called screen "**Hx Family**" will also be displayed on the original "**Hx Family**" of the **Pigmented Lesions** screen set because this same screen is used in that set.

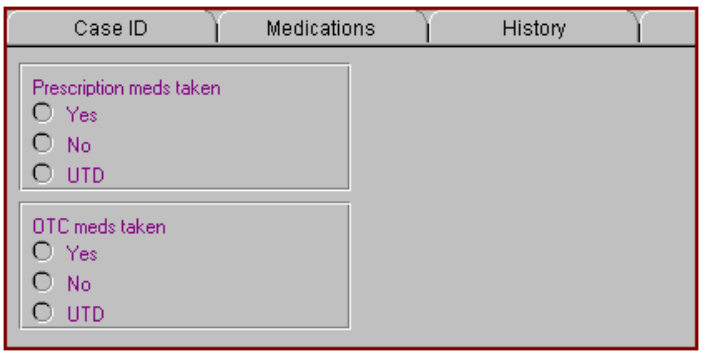
Since the original screen shares the exact same set of variables with the called screen(s), additions or changes made to that screen will always appear wherever that screen is reused.

Exit the **Design** window and return to the **Case Selection** screen. Again, the system will rebuild the data store database to save the variables you added.

COPY VARIABLES FROM ANOTHER SET OF SCREENS

The **Medications** screen on the **Rash** screen set shares the two variables with the **Medications** screen belonging to the **Pigmented Lesions** set of screens, but it also has two additional variables.

From the **Case Selection** screen, select the "**Pigmented Lesions**" screen set and click on the <OK> button to enter the design of that screen set. When the **Design** window is open, select the "**Medications**" tab to open that screen to add the following variables:

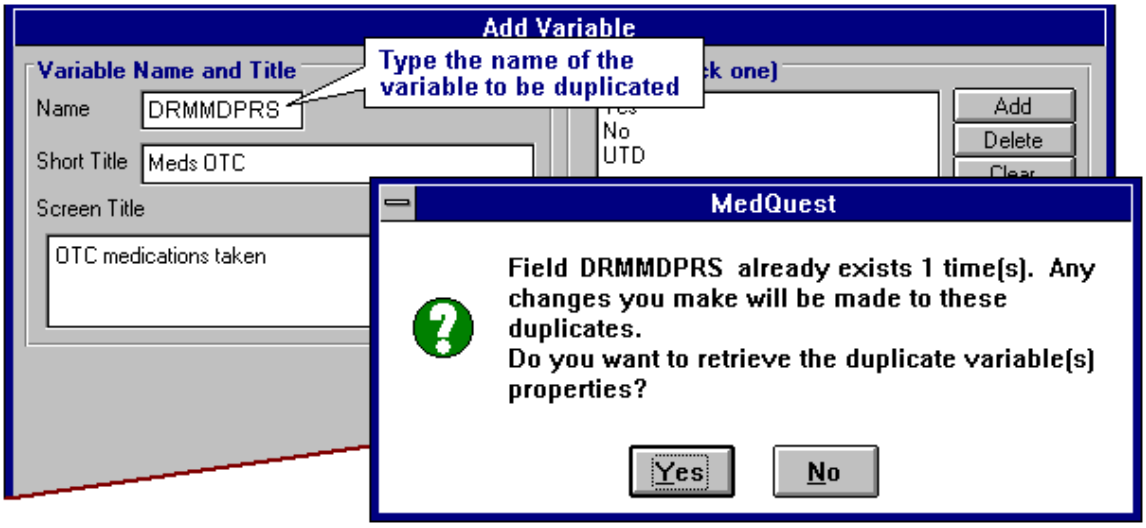


Exercise 1: Add Variable "**Prescription meds taken**" (Name: "**DRMMDPRS**," Screen title: "**Prescription meds taken**"). Select variable type "**Option (pick one)**" and add "**Yes**," "**No**," and "**UTD**" as options.

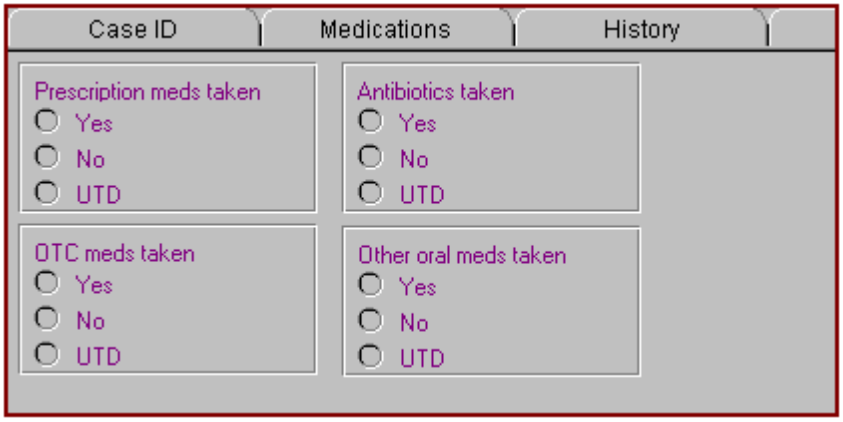
Exercise 2: Add Variable "**OTC meds taken**" (Name: "**DRMMDOTC**," Screen title: "**OTC meds taken**"). Select variable type "**Option (pick one)**" and add "**Yes**," "**No**," and "**UTD**" as options.

Exit the **Design** window and return to the **Case Selection** screen (after the automated rebuild of the data store database takes place).

Select the **Rash** screen set and click on the <OK> button to begin the design. When the **Design** window opens, select the "**Medications**" tab to open that screen to add the following variables:



Exercise 3: Duplicate the "**Meds prescription taken**" variable by typing "**DRMMDPRS**" for the variable in the *Name* text box on the **Edit Variable** screen. Click on the <YES> button on the warning message screen to confirm that you want to retrieve the duplicate variable's properties. Use the same procedures to duplicate variable "**Meds OTC taken**."



Exercise 4: Add Variable "**Antibiotics taken**" (Name: "**DRMATB**," Screen title: "**Antibiotics taken**"). Select variable type "**Option (pick one)**" and add "**Yes**," "**No**," and "**UTD**" as options.

Exercise 5: Add Variable "**Other oral meds taken**" (Name: "**DRMMDOR**," Screen title: "**Other oral meds taken**"). Select variable type "**Option (pick one)**" and add "**Yes**," "**No**," and "**UTD**" as options.